

REMARKS/ARGUMENTS

Claims 1, 6 and 12 have been amended without prejudice or disclaimer. Claims 1-6 and 8-16 remain in the application.

Claim Rejections – 35 USC § 103:

Claims 1-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wannasarnmaytha et al. (Two-step Kalman-filter-based AFC for direct conversion-type receiver in LEO satellite communications; Wannasarnmaytha, A; Hara, S.; Morinaga, N.; Vehicular Technology, IEEE Transactions on, Volume: 49, Issue: 1, Jan. 2000, Pages: 246 – 253).

Applicants believe that the Examiner meant to reject claims 1-6 and 8-16 under 35 U.S.C. 103(a). Independent claims 1, 6 and 12 have been amended to further clarify that which Applicants regard as their invention. No new matter has been added. Support for this amendment can be found throughout the specification, for example on page 7, line 13-14.

The Wannasarnmaytha system employs a two-step process for frequency estimation – coarse estimation before the second CS filter and fine estimation after the second CS filter as can be seen from FIG. 2 and page 248, right column, first paragraph. This is contrary to what is being claimed by the Applicants in independent claims 1, 6 and 12 wherein the frequency estimation is performed only before the second CS filter and thus is a one-step process (also see FIG. 3). Applicants have amended each independent claim to more clearly emphasize a one-step fine frequency estimator (claims 1, 6) and a one-step fine frequency error estimate (claim 12). Even if the Wannasarnmaytha system of FIG. 2 could be modified for a one-step frequency estimation (without the Fine Kalman Filter based AFC block), Wannasarnmaytha still fails to teach or otherwise suggest that the limitation of step 7 of claims 1, 6 and 12 of a fine symbol time estimator for determining symbol timing with greater precision being performed after the second CS filter.

Furthermore, Wannasarnmaytha fails to teach or otherwise suggest a fine symbol time estimator for determining symbol timing with greater precision (limitation of step 7 of claim 1, 6 and 12) being performed after the second CS filter. The Wannasarnmaytha system can operate, but not optimally, with the time observation obtained before the second CS filter.

Performing step 7 of claim 1, 6 and 12 as claimed by the Applicants of determining symbol timing with greater precision after the second CS filter improves system performance.

Additionally, the independent claims have been amended to recite a single time synchronization word. The advantages of using a single synchronization word are described on page 1 lines 26-32 to page 2, lines 1-2. Further support is found on page 5, lines 19-21 and the Abstract, lines 11-12.

Since the Wannasammaytha reference fails to teach or otherwise suggest all the limitations of the independent claims 1, 6 and 12 as amended, the Applicants contend that claims 1, 6 and 12 are allowable over the prior art of record. Claims 2-5, 8-11 and 13-16 are dependent claims that provide further limitations to what are believed to be allowable independent claims and as such are also in condition for an allowance.

Claims 1-3 and 12-14 were rejected under 35 U.S.C. 103(a) under 35 U.S.C. 103(a) as being unpatentable over Moher et al. (US-6,693,983).

Applicants submit that the Moher reference is not a valid citation based on an affidavit filed under 37CFR1.131 provided herein.

Notwithstanding the above, independent claims 1 and 12 have been amended to include the use of a single synchronization word. The advantages of using a single synchronization word are described on page 1 lines 26-32 to page 2, lines 1-2. Further support is found on page 5, lines 19-21 and the Abstract, lines 11-12. The Moher reference uses two synchronization words (see FIG. 1, 13 and 14). Additionally, the Moher reference teaches fine timing estimation before the second CS filter (see FIG. 2, 500) while each of Applicants' independent claims perform the fine symbol time estimation after the second CS filter thus providing a more accurate timing estimation (see FIG. 3).

Since the Moher fails to teach or otherwise suggest all the limitations of the independent claim 1 and 12, the Applicants contend that claims 1 and 12 are allowable over the prior art of record. Claims 2-5 and 13-16 are dependent claims that provide further limitations to what are believed to be allowable independent claims and as such are also in condition for an allowance.

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Accordingly, the rejection of independent claims 1, 6 and 12 is believed to be overcome. As stated previously, claims 2-5, 8-11 and 13-16 are dependent claims that provide further limitations to what are believed to be allowable independent claims and as such are also in condition for an allowance.

The Applicants believe that the subject application, as amended, is in condition for allowance. Such action is earnestly solicited by the Applicants.

The Commissioner is hereby authorized to charge any necessary fee due to Deposit Account No. 50-2117, Motorola, Inc., or credit any overpayment to the same account.

Respectfully submitted,

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